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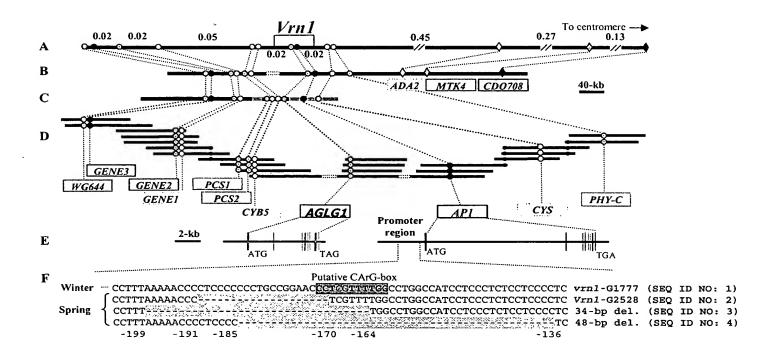


Fig. 1

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Figure 2A

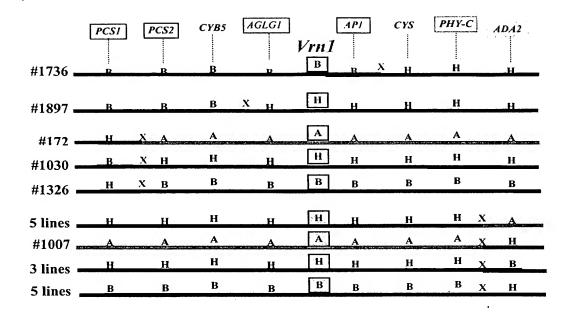


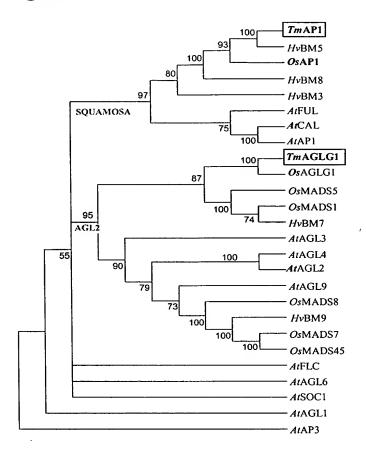
Figure 2B

		_	AA		AB		BB	
F ₂ family	G2528	G1777	N	D	N	D .	N	D
#1736	0 D	45 D	10	-5/+1	16	-5/0	10	-5/+1
#1897	0 D	60 D	. 7	35/40	22	-5/0	8	-5/0

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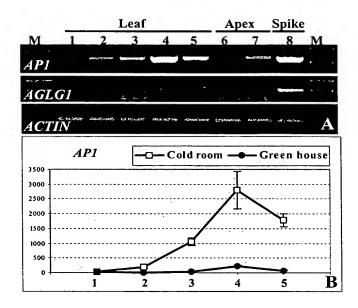


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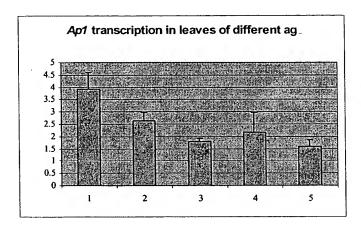
Figure 4

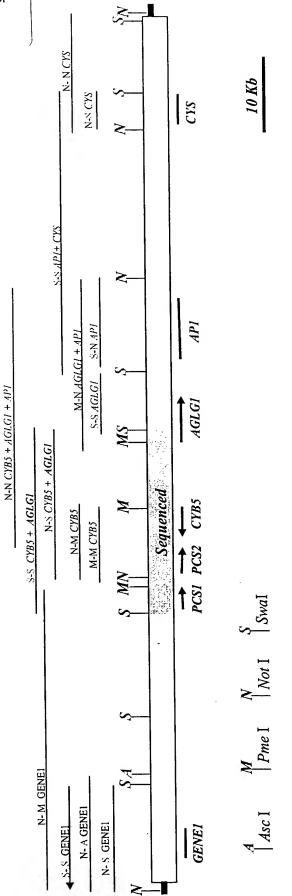
A.

В.



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Figure 7

G2528 (Vrn1) = DV92 (vrn1)

- B. G1777 (vrn1) = G3116(vrn1)

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- A. G2528 (VrnI) = DV92 (vrnI) MGRGKVQLKRIENKINRQVTFSKRRSGLLKKAHEISVLCDAEVGLIIFSTKGKLYEFSTESCMDKILERYER YSYAEKVLVSSESEIQGNWCHEYRKLKAKVETIQKCQKHLMGEDLESLNLKELQQLEQQLESSLKHIRSR $KNQLMH\underline{E}$ SISELQKKERSLQEENKVLQKELVEKQKAHAAQQDQTQPQTSSSSSSFMLRDAPPAANTSIHP AAAGERAEDAAVQPQAPPRTGLPPWMVSHING* (SEQ ID NO: 7)
- B. G1777 (vrnI) = G3116 (vrnI) MGRGKVQLKRIENKINRQVTFSKRRSGLLKKAHEISVLCDAEVGLIIFSTKGKLYEFSTESCMDKILERYER YSYAEKVLVSSESEIQGNWCHEYRKLKAKVETIQKCQKHLMGEDLESLNLKELQQLEQQLESSLKHIRSR $KNQLMH\underline{G}SISELQKKERSLQEENKVLQKELVEKQKAHAAQQDQTQPQTSSSSSSFMLRDAPPAANTSIHP$ AAAGERAEDAAVQPQAPPRTGLPPWMVSHING* (SEQ ID NO. 8)

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Figure 9A

G2528	1	ATTTGCCT@NTGAGACGCTTGACAACAGTGTATTGATGGATGTCTGGTCGGTATACACGC
DV92	1	ATTTGCCT&ATGAGACGCTTGACAACAGTGTATTGATGGATGTCTGGTCGGTATACACGC
G1777	'n	ATTTGCCTTATGAGACGCTTGACAACAGTGTATTGATGGATG
G3116	1	ATTTGCCTCATGAGACGCTTGACAACAGTGTATTGATGGATG
03110	- 1	
G2528	61	ACAGCACAGTACCCCTACTCCTAGGACTGGCGAGTATCTTTCATTCA
DV92		ACAGCACAGTACCCCTACTCCTAGGACTGGCGAGTATCTTTCATTCA
G1777	61	ACAGCACAGTACCCCTACTCCTAGGACTGGCGAGTATCTTTCATTCA
G3116		ACAGCACAGTACCCCTACTCCTAGGACTGGCGAGTATCTTTCATTCA
G3116	01	ACAGCACAGIACCCCIACICCIAGOACIGGCGAGIAICIIICAIICAIICAIICAIICAI
G2528	121	CGGGTCGGCCAAAAGTAGAAAATACACTGCGCCCACTCAATCCACGCAGCGCACTGCAC
DV92		CGGGTCGGCCAAAAGTAGAAAAATACACTGCGCCCACTCAATCCACGCAGCGCACTGCAC
G1777		CGGGTCGGCCAAAAGTAGAAAAATACACTGCGCCCACTCAATCCACG <mark>T</mark> AGCGCACTGCAC
G3116		CGGGTCGGCCAAAAGTAGAAAAATACACTGCGCCCACTCAATCCACGTAGCGCACTGCAC
G3116	121	COOLING CONTROLLA CACACACACACACACACACACACACACACACACACA
G2528	181	TGCACAGCAACGCTTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGGACGCGGCGC
DV92	181	TGCACAGCAACGCTTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGGACGCGGCGC
G1777	181	TGCACAGCAACGCTTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGGACGCGGCGC
G3116	181	TGCACAGCAACGCTTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGGACGCGGCGC TGCACAGCAACGCTTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGGACGCGGCGC
63116	101	IGCACAGCACGCTCATGTCAAAAGTCGAGCTCAAGCATGCACGCGATGCACGCGGG
G2528	241	GAATGACCCGGGCGCACGACGCGAGTGCCCGCCGCCCCGCCCCGCCTGCCCCGCAGCCG
DV92	241	GAATGACCCGGGCGCACGACGCGAGTGCCCGCCGCCCCCCCC
G1777	241	GAATGACCCGGGCGGCACGACGCGAGTGCCCGCCGCCCCCCCC
G1777 G3116	241	GAATGACCCGGGCGCACGACGCGAGTGCCCGCCGCCCCCCCC
G3116	241	OPEN TO SECOND S
G2528	301	ACCTCT#CCCAAACGGGACAAGCGAGACGGCCCAAAACGAGCAAGGAAAGCAGC
DV92	301	ACCTCT CCCAAACGGGACAAGCGAGACGGCCCAAAACGAGCAAGGAAAGCAGC
G1777	301	ACCTCT-CCCAAACGGGACAAGCGAGACGGCCCAAAACGAGCAAGGAAAGCAGC
G3116	301	ACCTCT-CCCAAACGGGACAAGCGAGACGGCCCAAAACGAGCAAGGAAAGCAGC
63110	301	ACCICI CCCAAACGGGACAAGCGACACGCCCARREICGAGGARAGGARRIGGAGGACAGGARAGGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAA
G2528	361	$\mathtt{CTGTGGCAGCCCGCCCCACGACCGTCATCTCG}^{\mathtt{G}}\mathtt{CCTTCCATTTCCATTTCCCTGGACGGA}$
DV92	360	CTGTGGCAGCCCGCCCCACGACCGTCATCTC <mark>G</mark> CCTTCCATTCCATTTCCCTGGACGGA
G1777	360	CTGTGGCAGCCCGCCCCACGACCGTCATCTC <mark>A</mark> CC <mark>C</mark> TCCATTCCATTTTCCCTGGACGGA
G3116	360	CTGTGGCAGCCCGCCCCACGACCGTCATCTCACCTTCCATTTCCATTTTCCCTGGACGGA
05110	500	6.167.656.1666.0666.0661.067.06.1
G2528	421	CCAGACCCGTCCGAGCCGCCCTGACCTAGCCAGCCAGCATTTCCTCTTTCGTCCCCCGCC
DV92	420	CCAGACCCGTCCGAGCCGCCCTGACCTAGCCAGCCAGCATTTCCTCTTTCGTCCCCCGCC
G1777	420	CCAGACCCGTCCGAGCCGCCCTGACCTAGCCAGCCAGCATTTCCTCTTTCGTCCCCCGCC
G3116	420	CCAGACCCGTCCGAGCCGCCCTGACCTAGCCAGCCAGCATTTCCTCTTTCGTCCCCCGCC
G2528	481	GCCGTGACCAAAAAAGCAAAAAAGGAAAAAGGGAAAATGCTAAAGGAAAAAACTCCGCTC
DV92	480	GCCGTGACCAAAAAAGCAAAAAAGGAAAAAGGGAAAATGCTAAAGGAAAAAACTCCGCTC
G1777	480	GCCGTGACCAAAAAAGCAAAAAAGGAAAAAGGGAAAATGCTAAAGGAAAAAACTCCGCTC
G3116	480	GCCGTGACCAAAAAAGCAAAAAAGGAAAAAGGGAAAATGCTAAAGGAAAAAACTCCGCTC
G2528	541	TTTCCCTTCTTCTAGGCCTAGGGTACAGTAGAATATTATAAAAGGAAAAATTCTGCTCGT
DV92	540	
G1777	540	
G3116	540	$\tt TTTCCCTTCTTCTAGGCCTAGGGTACAGTAGAATATTATAAAAGGAAAAATTCTGCTCGT$
G2528		TTTTTGCTCTGTGTGTGTGTTTTGTGGCGAGAGAAAATGATTTGGGGAAAGCAAAATCGG
DV92	600	
G1777	600	
G3116	600	TTTTTGCTCTGTGGTGTGTTTTGTGGCGAGAGAAATGATTTGGGGAAAGCAAAATCGG
an		
G2528	661	
DV92	660	
G1777	660	
G3116	660	GAGATICGCACGTACGATCGTTCGACACGTCGACGCCCGGCGGGCG

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Figure 9B

G2528	721	GTGTGGCTGCAGGACCGCGGGGCCCGCGGGGCGGGCCGGGCCAATGGGTGCTCGACAGC
DV92	720	GTGTGGCTGCAGGACCGCGGGGCCCCGCGGGGCGGGCCCAATGGGTGCTCGACAGC
G1777	720	GTGTGGCTGCAGGACCGCGGGGCCCGCGGGCCGGCCCAATGGGTGCTCGACAGC
G3116	720	GTGTGGCTGCAGGACCGCGGGGCCCGCGGGGCGGGCCAATGGGTGCTCGACAGC
G2528	781	GGCTATGCTCCAGACCAGCCCGGTATTGCATACCGCGCTCGGGGCCAGATCCCTTTAAAA
DV92	780	GGCTATGCTCCAGACCAGCCCGGTATTGCATACCGCGCTCGGGGCCAGATCCCTTTAAAA
G1777	780	GGCTATGCTCCAGACCAGCCCGGTATTGCATACCGCGCTCGGGGCCAGATCCCTTTAAAA
G3116	780	GGCTATGCTCCAGACCAGCCCGGTATTGCATACCGCGCTCGGGGCCAGATCCCTTTAAAA
65110	,00	GGCTATGCTCAGACCAGCCGGTATTGCATACCGCTCGGGGCCAGACCCGCTTTTTTT
G2528	841	ACCCTCGTTTTGGCCTGGCCATCCTCCCTCTCCCCCC
DV92	840	ACCCTCCCCCCTGCCGGAACCCTCGTTTTGGCCTGGCCATCCTCCCTC
G1777	840	ACCCCTCCCCCCTGCCGGAACCCTCGTTTTGGCCTGGCC
G3116	840	ACCCTCCCCCCTGCGGAACCCTCGTTTTGGCCTGGCCATCCTCCCTC
03110	010	
G2528	881	TCTTCCACCTCACCCAACCACCTGATAGCCATGGCTCCGCCGCCTCGCCTCCGCCTGCGC
DV92	900	TCTTCCACCTCACCCAACCACCTGATAGCCATGGCTCCGCCTCGCCTCCGCCTGCGC
G1777	900	TCTTCCACCTCACCCAACCACCTGATAGCCATGGCTCCGCCTCGCCTCCGCCTGCGC
G3116	900	TCTTCCACCTCACCCAACCACCTGATAGCCATGGCTCCGCCTCGCCTCCGCCTGCGC
G2528	941	CAGTCGGAGTAGCCGTCGCGGTCTGCGGGTGTTGGAGGGTAGGGCGTAGGGTTGGCCCG
DV92	960	CAGTCGGAGTAGCCGTCGCGGTCTGCGGGTGTTGGAGGGTAGGGCGTAGGGTTGGCCCG
G1777	960	CAGTCGGAGTAGCCGTCGCGGTCTGCGGGTGTTGGAGGGTAGGGCGTAGGGTTGGCCCG
G3116	960	CAGTCGGAGTAGCCGTCGCGGTCTGCGGGTGTTGGAGGGTAGGGCGTAGGGTTGGCCCG
G2528	1001	GTTCTCGAGCGGAGAGG Start codon (SEQ ID NO: 9)
DV92	1020	GTTCTCGAGCGGACATG Start codon (SEQ ID NO: 10)
G1777	1020	GTTCTCGAGCGGAGAGE Start codon (SEQ ID NO: 11)
G3116	1020	GTTCTCGAGCGGAGATE Start codon (SEQ ID NO: 12)
		5000

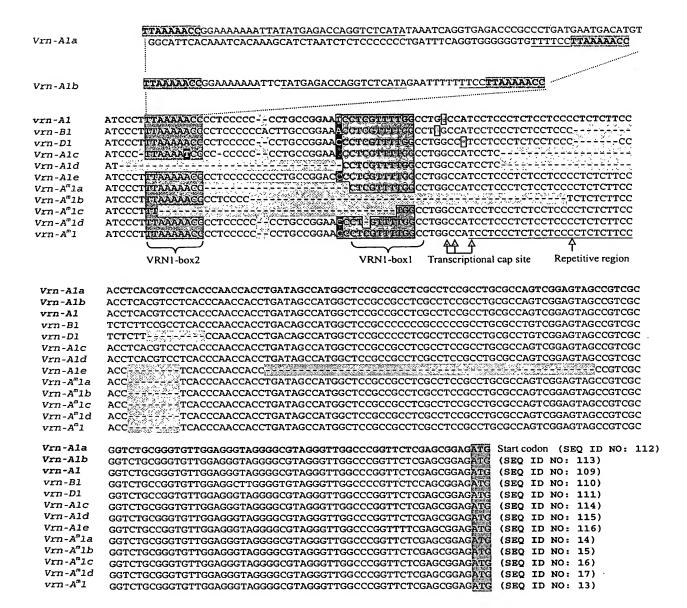
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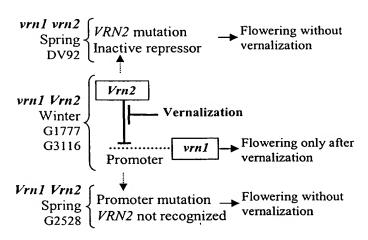
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Figure 11



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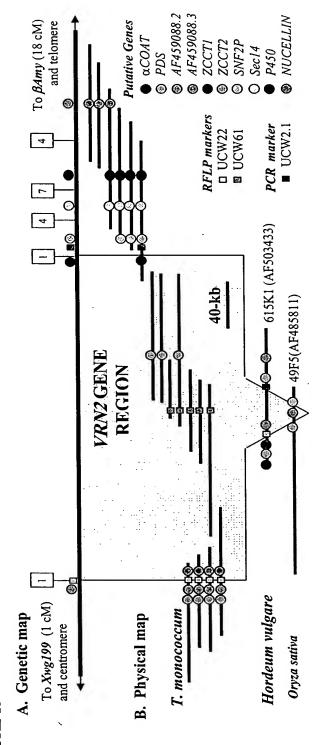
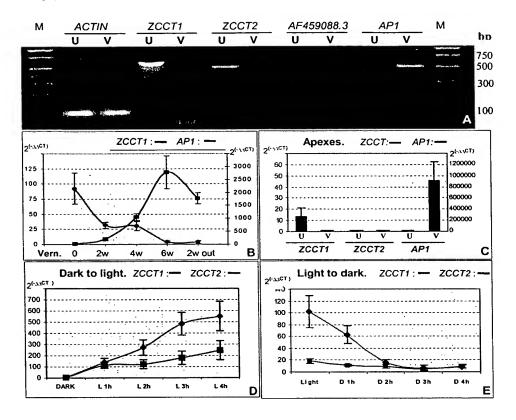


FIGURE 13

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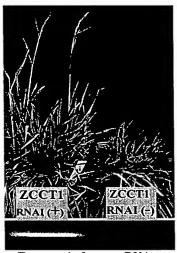
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FIGURE 14



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FIGURE 15A

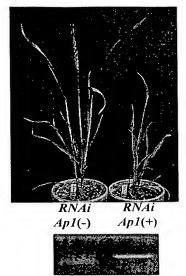


Transgenic Jagger cDNAs

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FIGURE 15B



Transgenic Bobwhite cDNAs

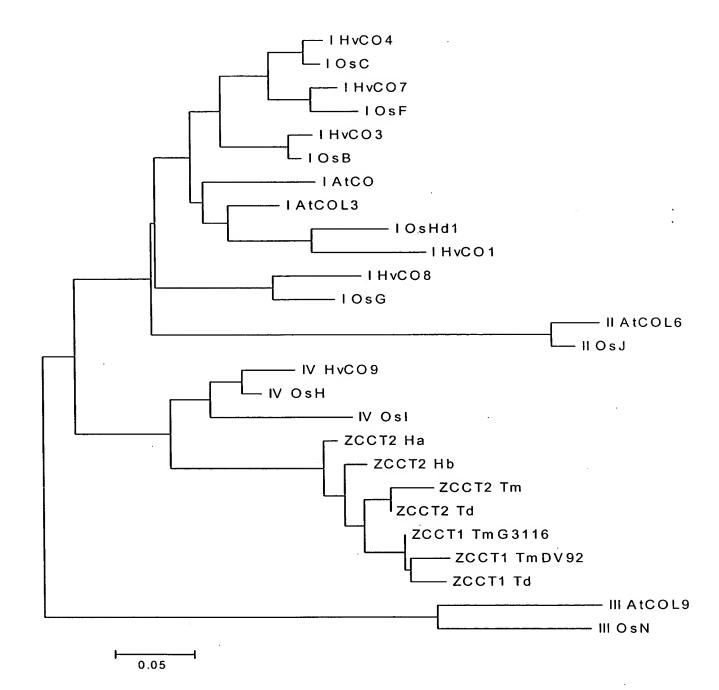
FIGURE 15C



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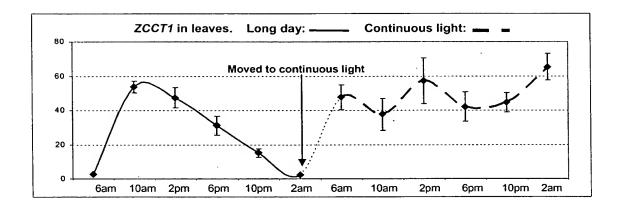
FIGURE 16



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FIGURE 17



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FIGURE 18

\mathbf{A}

ZCCT1_TmDV92	erlakvmryrekrkrrydkolryesrkayaeurp vngrfvky			(SEQ	ID	NO:	117)	
ZCCT1_TmG3116	ER AKVMRYREKRKRRRYDKOIRYESRKAYAEURPRVNGRFVKV			(SEQ	ID	NO:	118)	
ZCCT1_Td	ER AKVMRYREKRKRRRYDKOIRYESRKAYAEIRPRYNG FVKV			(SEQ	ID	NO:	119)	
ZCCT2_Tm	EREAKVMRYREKRKRR YOKOIRYESRKAYAEURPRVNG FVKV			(SEQ	ID	NO:	120)	
ZCCT2_Td	EREAKVMRYREKRKRR YEKQIRYESRKAYAEURPRVNGRFVKW			(SEQ	ID	NO:	121)	
ZCCT2_Hb(Fan)	EREAKVMRYREKRKKRRYDKOIRYESRKAYAELRPRVNGRFVKV			(SEQ	ID	NO:	122)	
ZCCT2_Ha	EREAKVMRYREKRKRRRYDKOIRYESRKAYAEIRPRYNGRFAKY Z	CCT		(SEQ	ID	NO:	123)	
OsI	EREAKTMRY EKRKKR YEKOIRYASRKAYAE RPRV GRFAK.			(SEQ	ID	NO:	124)	
HvCO9	LREAKTMRY EKRKRRRYEKQIRYASRKAYAE RPRVKGRFAKV			(SEQ	ID	NO:	125)	
OsH	DREAKVMRY EKRKRRYEKOIRYASRKAYAE RPRVKGRFAKY G	roup	IV	(SEQ	ID	NO:	126)	
AtCO .	DREAKVIRYREKRKURKEEKIII RYPSRKAYAEERPRVNGRFRKR			(SEQ	ID	NO:	127)	
OsHd1	REARVERYREKKARKFEKTIRYE RKAYAEARPRIKGRFYKR			(SEQ	ID	NO:	128)	
HvCO1	EREARVERY EKKERKEEKT RYAPRKAYAE RPREKGREAKR G	roup	Ιa	(SEQ	ID	NO:	129)	
HvCO3	DREARV RYREKRKMRREEKIIIRYASRKAYAEIRPRIIKGRFAKR			(SEQ	ID	NO:	130)	
OsB	DREARY RYREKRKIRREHKIII RYHSRKAYAEIRPRIKGRFAKR G	roup	Ιb	(SEQ	ID	NO:	131)	
HvCO4	EREARKMRYREKRKERREKNIRYNSRKAYAENRPRYKGRENKR			(SEQ	ID	NO:	132)	
OsC	EREARLMRYREKRK RRIFEKII I RYASRKAYAE IRPRI KGRFAKR			(SEQ	ID	NO:	133)	
AtCOL3	EREARVERYREKRKARKFEKUIRYASRKAYAE RPREKGRFAKA G	roup	Ic	(SEQ	ID	NO:	134)	
HvCO7	GREARIMRYREKRKNRREEKUIRYASRKAYAESRPRVKGRFAKR			(SEQ	ID	NO:	135)	
OsF	GREARIMRYREKRKARRFEKTILRYRSRKAYAETTRPRVKGRFRKA G	roup	Id	(SEQ	ID	NO:	136)	
HvC08	D ZARVMRYREKRKNRKOHKUIRYASRKAYAEARPRIKGRFVKR			(SEQ	ID	NO:	137)	
OsG	RE RVMRYREKRKNRKEHKNITRYASRKAYAEARPRLKGRFVKR G	roup	Ιe	(SEQ	ID	NO:	138)	
AtCOL6	EREARVSRYREKRRIRLISSKKIRYEVRKLNAEKRPRMKGRFVKR			(SEO		NO:	139)	
OsJ	EREARVSRYREKRTRLEAKKIRYEVRKLNAEKRPRMKGRFVKR G	roup	II					
AtCOL9	TRNNAVMRY: EKKKARKADKRVRYPSRKARADVRRRVKGREVKA		•				141)	
OsN	SRDNAUTRY:ÉKKKRR GEDKKIRY SRKARADVRKRVKGRFVKA G	roup	III					
	The state of the s							

Tm=T. monococcum, Td=T. dicoccoides A genome, Hv=Hordeum vulgare, Os=O. sativa.

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FIGURE 18

 \mathbf{B}

ZCCT1_Td_A	MSMSCGLCGANNCPRLMVSPIHHAHHHQEHQL	Hx_3H	position not certain
ZCCT1 DV92	MSMSEGLEGANNCPRLMVSPIHHHHHHHQEHQL		(SEQ ID NO: 143)
ZCC11_DV92	MSMSEG DEGAMMCPRLMVSP1HHHHHHHQEHQL	нх ₃ н	(SEO ID NO: 144)
ZCCT1_G3116	MSMSCGLCGANNCPRLMVSPIHHHHHHHQEHQL	Hx_3H	position not certain
racom val. (m)	vois Sat San Branks San		(SEQ ID NO: 145)
ZCCT-Hb(Fan)	MSMACGLCGASNCPYHMMSPWWHHHHHQEHR	HX ₃ H	(SEO ID NO: 146)
ZCCT-Ha	мsмs@glcgasnc-унммsруи ниннноен і	Hx ₃ H	position not certain
			(SEQ ID NO: 147)
ZCCT2_Td_B	MSMSCGLCGASNCPHHMIISPWEOHHCHHOEHRL	Hx ₃ H	
ZCCT2_DV92	MSMSCGLCGASDCPHHMISPVLOHOEOHWLREY MEMSCGLCGASDCPHHMISPVLOHOEOHRREY		(SEQ ID NO: 148) (SEQ ID NO: 149)
ZCCT2_Td_A	MEMSEGLEGASOCPHHMISPVEOROEOHRUREY		(SEQ ID NO: 150)

CO-LIKE GROUP IV (Yellow highlight: similar ZCCT)

OSI (SEQ ID NO: 151) MGMANEESPNYQVKKGGRIPPRSSLIYPFMSMGPAAGEGEGLEGADGGGCCSRHRHD OSH (SEQ ID NO: 152) MSAASGAAEGVEGGGVGECGELHQRRG

CO-LIKE Group I, II, III

HvC01	(SEQ ID NO: 153	MNCVSNGTVYEEAVGREGRWARL@DG@CTVPSVVYCRADSAYL@AS@DA
HvC03	(SEQ ID NO: 154	MIKAEPDLRGQLRGSAGVGGMQLQQRGDSGRSAPCAFYCRADSAALGAAGDA
HvCO4	(SEQ ID NO: 155	MEGEEKPVVGGAYWGVGARAGDSGATEAARLFCRADAAFLGAGGDA
	(SEQ ID NO: 156	rahgsgsrharvwl@ev@ehapaavtckadaavl@as@da
OsJ	(SEQ ID NO: 157	bid bid
OsN	(SEQ ID NO: 158) MDALCDFCREQRSMVYCRSDAASL@LS@DRNVHSANALSRRHTRTLL@DR@VGQ
	(SEQ ID NO: 159	PAAVRCLEENTSLEONEDWNGHGAASSAAGHKROTINEYSGEP